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ABSTRACT

This report presents the evaluation of the Worcester Operation Reading Base (ORB) Program which operated during 1971-1972, funded under Title I of the 1965 Elementary Secondary Education Act. The ORB Program was designed to provide small group remedial reading instruction to students in the target area schools of Worcester. Evaluation of the program focused on the assessment of program objectives, including student reading achievement, attitude toward school and self as learner, and socio-emotional behavior. In addition, the operation and implementation of the program, as specified in the project proposal, were assessed. The ORB Program provided small group instruction for students requiring remedial assistance in reading. Students attended daily classes, 30 to 45 minutes in length, conducted by a compensatory reading teacher. The teachers provided a variety of instructional situations designed to build students' basic reading skills and to reinforce the instruction of the regular class. The program operated at 21 schools; depending on the number of eligible students, between one and three teachers were assigned to a school. Participants were educationally disadvantaged students in Grades One through Six of Title I designated target area schools. Students were identified as educationally disadvantaged by achievement tests and by the evaluations of classroom teachers and school principals. (Author/JM)

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Worcester Public Schools
Worcester, Massachusetts

Evaluation of the Worcester Title I Operation Reading Bases (ORB) Program 1971-1972

UD 014 014

HEURISTICS INC.

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EVALUATION OF THE

WORCESTER TITLE I

OPERATION READING BASE (ORB) PROGRAM

1971 - 1972

Heuristics, Inc.
Dedham, Massachusetts

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INTRODUCTION

This report presents the evaluation of the Worcester Title I Operation Reading Base (ORB) Program which operated during 1971-1972. Heuristics, Inc. was engaged in the Fall of 1971 to perform the evaluation of this program; therefore, both formative and summative assessment activities were conducted. The ORB Program was designed to provide small group remedial reading instruction to students in the target area schools of Worcester. Evaluation of the program focused on the assessment of program objectives, including student reading achievement, attitude toward school and self as learner, and socio-emotional behavior. In addition, the operation and implementation of the program, as specified in the project proposal, were assessed.

DESCRIPTION OF PROGRAM

The Worcester Operation Reading Base Program provided small group instruction for students requiring remedial assistance in reading. Students attended daily classes, 30 to 45 minutes in length, conducted by a compensatory reading teacher. The teachers provided a variety of instructional situations designed to build students' basic reading skills and to reinforce the instruction of the regular class.

The program operated at 21 schools; depending on the number of eligible students, between one and three teachers were assigned to a school. Twenty-nine teachers staffed the program; each teacher served approximately thirty students, four to six at a time. Table 1 presents the list of schools and the number of compensatory teachers assigned to each school. The table also reports the number of students involved and grade levels of students served by each teacher. Many of the program staff members were first year teachers. Some had special certification in reading; the remaining teachers were certified to teach at the elementary level. A Program Coordinator was responsible for the overall operation of the program, the distribution of materials and organization of in-service training for the staff.

In compliance with Title I regulations requiring comparable city supported services for target and non-target schools, a plan was formulated that would provide like services, but not create the problem of two remedial teachers for the participants in ORB. The Reading Resource Teachers (city funded) did not provide direct instructional service to the ORB students. They did serve in an advisory capacity, assisting Title I reading teachers in diagnosis and continuous planning of instructional activities. Given the limited teaching experience of the majority of ORB teachers this resource and assistance role is seen as a significant factor in the success experienced by the ORB Program, and judged to be a sensible way of insuring that Title I monies supplement, not supplant, local effort.

Table 1

Schools in Program, Compensatory Teachers Assigned to Each, Students and Grade Levels

School	Number of Teachers	Approximate Number of Students	Grades Served
Belmont Street Community	3	90	1-6
Cambridge Street	1	30	1-6
Canterbury Street	2	60	1-3
Chandler Street	2	60	1-6
Clark Street	1	30	1-3
Edgeworth Street	1	30	2-6
Elm Park Community	2	60	2-6
Grafton Street	2	60	2-6
Harlow Street	1	30	1-6
Holy Name of Jesus	1	30	4-6
Lamartine Street	1	30	1-6
Millbury Street	1	30	1-6
Oxford Street	1	30	2-6
Sacred Heart Central	1	30	4-6
Sacred Heart School	1	30	2-5
St. John - Ascension	1	30	1-4,6
St. Nicholas Avenue	2	60	1-6

Table 1 (Cont.)

School	Number of Teachers	Approximate Number of Students	Grades Served
St. Stephen's	1	30	1-6
Union Hill	1	30	1-3
Winslow Street	1	30	1-3
Woodland Community	2	60	1-4,6
Total	29	870	

A fifteen-week in-service program was held during the Spring of 1972. Although participation was voluntary, almost all ORB teachers attended. The program was organized by the reading department of the Worcester Public Schools and included sessions on such topics as diagnosis of reading problems, phonics instruction, available reading materials.

PARTICIPANTS

Participants were educationally disadvantaged students in Grades 1-6 of Title I designated target area schools. Students were identified as educationally disadvantaged by achievement tests and by the evaluations of classroom teachers and school principals.

Each school principal identified 50 eligible students for each compensatory reading teacher assigned to his school. The list specified the ten students (of the fifty) having greatest need for the services provided by the program and these ten were immediately designated for the program. Twenty students from the remaining forty were randomly designated by the evaluator. In this way, a "neediest" group (ten students) was identified for each teacher, as well as a randomly "selected" group of twenty students, whose achievement could

then be compared to that of the "control" group composed of the 20 students remaining from the initial fifty. Every attempt was made to restrict participation to those 30 students originally assigned to each teacher; however, some students left the program during the year and a few students were added.

OBJECTIVES AND PRIORITIES

The following performance objectives were formulated for the ORB students:

1. The students will show at least one month's growth for each month in the program, growth to be measured by pre and post-testing with the Gates-McGinitie Reading Tests.

2. The students' grades in other subjects will improve as reading skills improve.

3. The students' attitude toward school will be improved when opportunity for success becomes greater.

4. The opportunity provided for success in the program will improve school attendance and reduce antisocial behavior.

EVALUATION DESIGN

A variety of evaluation activities were structured to assess the degree to which objectives were accomplished and to assess the operation of the ORB Program. These activities included:

1. Pre-post administration of the Gates-McGinitie Reading Tests to ORB students and to a group of control students; analysis of results to assess reading achievement.

2. Comparision of 1970-1971 and 1971-1972 final grades of ORB students in reading, mathematics, and other school subjects.

3. Analysis of the Teacher Rating of Student Classroom Behavior, administered pre and post to ORB students, to assess their attitudes toward school and toward self as learner.

4. Comparision of 1970-1971 and 1971-1972 attendance data for ORB students.

5. Analysis of the Pupil Behavior Inventory administered pre and post to ORB students, to assess their anti-social behavior.

6. Construction, administration, and analysis of the two questionnaires (December, 1971 and May, 1972) for compensatory reading teachers.

7. Construction, administration, and analysis of post-program questionnaires for parents, regular classroom teachers and school principals of program students.

8. On-site observation of program classes.

9. Informal interviews with program staff members.

10. Provision of verbal and written feedback to the project coordinator.

This report summarizes the formative evaluation activities and findings, then analyzes the cognitive and affective achievement data and assesses the degree of accomplishment of objectives. A discussion is included of the nature and frequency of program activities, as determined by classroom observations and interviews with the program teachers. The discussion focuses on the attitudes of ORB teachers, parents, classroom teachers, and school principles toward the ORB program. Finally, the report concludes with a list of commendations and recommendations for the program, based on the evaluative data collected.

FORMATIVE EVALUATION ACTIVITIES AND FINDINGS

Formative assessment of the ORB program was based on regular on-site observations of program classes, discussions with program teachers, and analysis of responses to a questionnaire administered in December, 1971. The willingness of the project staff, and especially the project coordinator, to respond to recommendations offered by the evaluators and to continually modify and improve the program is noteworthy and highly commendable. The ORB Program developed from a loose collection of reading teachers in 21 schools, to a smoothly operating, cohesive instructional effort. The evaluators commend the ORB staff on this accomplishment.

The following listing presents specific problems identified by Heuristics and program staff during the formative assessment, and describes corrective action implemented by the staff in the problem areas.

1. The delayed arrival of materials for the program was related to late appointment of a program coordinator. Immediately after her appointment, materials were ordered and distributed.

2. The lack of clear guidelines, policies, and expectations created confusion at the beginning of the program; once the program coordinator finished ordering materials, her communications with the teachers began to clarify the program guidelines.

3. The evaluators noted that, although the pre-service provided some relevant information for the staff, it did not completely satisfy their needs and requirements; the need for in-service training was identified. Such in-service training was offered for fifteen weeks during the second semester of the school year, and generally seemed to meet the immediate needs of the teachers.

4. Heuristics recommended that every attempt be made to improve the classroom facilities of ORB teachers. The evaluators note that limited action has been taken upon this recommendation, but recognize the inability of the program staff to take action because of limited availability of adequate facilities in program schools.

5. The evaluators noted the need for increased communication between the compensatory teachers and resource reading teachers. To some extent, increased communication has resulted from the in-service program during the second semester of the school year. Increased communication still seems to be necessary.

STUDENT ACHIEVEMENT: COGNITIVE AND AFFECTIVE OBJECTIVES

Cognitive Domain

Evaluation of program objectives involved the administration of standardized tests to assess student cognitive achievement, comparison of 1970-1971 and 1971-1972 final grades, and interim and final ratings on a list of behavioral objectives, of students in Grades 1-3. This section of the report presents a description and analysis of these, and a discussion of the degree of accomplishment of related program objectives.

Analysis of Gates-McGinitie Reading Tests Results

A Title I program can be considered successful only if students gained more than they would have gained had they not participated in the program; in this case the judgment is made by comparing ORB student performance to that of non-participating, or control group students. Thus, in addition to determining ORB student accomplishment of the program's cognitive objectives (Numbers 1 and 2), an evaluation design was formulated which would allow comparison of the reading achievement of program and non-program students by a statistical analysis of their scores on a standardized reading test.

As described in the "Participants" section of this report the selection procedure resulted in the formation of three groups: neediest, selected, and control.

Each of the 50 students referred for each ORB teacher was administered the Gates-McGinitie Reading Tests. Form 2 of the test was administered in October, 1971 as a pre-test and Form 1 in May, 1972 as a post-test; each student completed the appropriate level of the test: Grade 1--Primary A, Grade 2--Primary B, Grade 3--Primary C, and Grades 4, 5, 6--Survey D. This test measures student reading skills in vocabulary and comprehension. The Vocabulary subtest, "samples the child's ability to recognize or analyze isolated words." For each item in the Vocabulary subtest, the student circles the word which corresponds to the stimulus picture (Primary A, Primary B, and Primary C), or circles one of four words which is a synonym for the stimulus word (Primary B, Primary C, and Survey D). The Comprehension subtest measures a student's "ability to read and understand whole sentences and paragraphs." For the Comprehension subtest, the child either marks the picture which best illustrates the meaning of a written passage (Primary A and Primary B) or answers questions about a written passage by selecting one of four responses (Primary B, Primary C, and Survey D).

Each student earned a raw score (the number of questions he answered correctly) for each subtest; raw scores on alternate forms are equivalent and, thus, can be statistically compared. Raw scores were transformed into grade equivalent

scores. Reliability information on the Gates-McGinitie Reading Tests indicates that alternate form reliabilities for the four levels range from .81 to .89, and split-half reliabilities range from .88 to .96. These reliabilities are considered satisfactory for a reading achievement test.

This analysis assesses achievement of Objective 1, compares the cognitive achievement of selected and control groups, using analysis of covariance, then amplifies the discussion of the analysis of covariance.

Achievement of Objective 1. In order to assess Objective 1--"the students involved in the program will show at least one year's growth from pre to post-test on the Gates-McGinitie Reading Test,"-- the pre and post mean grade equivalent scores on both the Vocabulary and Comprehension subtests were compared, by grade, for all program students and for neediest students only. Table 2 reports the number of months gain in mean grade equivalent scores. In order to interpret these results and to determine the degree of accomplishment of Objective 1, the number of months reported in Table 2 should be compared to a criterion of seven months, the number which elapsed between pre- and post-testing. No reporting for Grade 1 is made because no transformations from raw score to grade equivalent existed for the extremely low pre-test raw scores of the First Graders.

Table 2

Months Gain in Mean Grade Equivalent Scores

Grade	All Program Students		Neediest Group Only	
	Months Gained			
	Vocabulary	Comprehension	Vocabulary	Comprehension
1	-	-	-	-
2	8	6	8	5
3	9	9	8	9
4	10	10	9	9
5	10	11	9	10
6	10	12	8	14

A review of Table 2 indicates that all groups (except Grade 1 which was not included) gained more than seven months in mean grade equivalent scores on the Vocabulary subtest. All but the second grade gained at least seven months on the Comprehension subtest. Evaluators attribute this limited gain to the difficulty of the test. The published norms do not provide grade equivalents corresponding to the very low scores found in Grade 2. Therefore, the pre-test grade equivalents assigned do not accurately describe the achievement level on the pre-test. Accordingly, gains measured from that point cannot be considered a true measure of gain. In spite of the inability of Grade 2 students to gain seven months in comprehension skills, the evaluators feel that Objective 1 was accomplished. Especially noteworthy are the exceptional gains of all program students in Grades 4, 5, and 6, ranging from ten to twelve months during the seven-month period.

Tables 3 and 4 provide the data which were used to formulate Table 2. Also reported in these tables are t-tests for correlated data used to compare pre and post mean Vocabulary and Comprehension scores by grade for the program students and for the neediest students only. In every case, a statistically significant difference at the .001 level was indicated by the t-test for correlated data. Although some of the gain can be attributed to maturation, a consideration of Tables 2, 3, and 4 together suggests that these statistical gains have practical and educational significance as well, since the students gained at least one month for each month in the program. In terms of absolute gains, then, the ORB Program seems to have been highly successful, both for the entire program group and for the neediest students. Figure 1 presents, in graphic form, the performance of students in Grades 2-6, on pre- and post-tests of each subtest. A review of these scores indicates that for all grades the post-test Vocabulary subtest mean grade equivalent is greater than the Comprehension subtest mean grade equivalent. This is a predictable outcome since the pre-test Vocabulary subtest mean was greater than the Comprehension subtest mean; also acquisition of vocabulary skills generally precedes acquisition of Comprehension skills by students requiring remediation.

Comparison of Selected and Control Groups. Since the ultimate success of the program can only be measured by comparing performance of program students to that of a comparable group of non-program students, an analysis of covariance was used to compare the selected and control groups. (A description of the selection procedures is in the section titled "Participants.") Tables 5-7 present the results of this analysis. Table 5 reports the Vocabulary subtest scores by grade for the selected and control groups. A comparison of the adjusted post-test mean raw scores of the selected and control groups indicates that, with the exception of Grade 2, the adjusted post-test mean raw score of the selected students was higher than that of the control students. Similar results are shown in the analysis of the Comprehension subtest scores, as reported in Table 6.

In spite of the fact that the adjusted post-test mean scores of the selected group were, with the exception of a single grade, higher than those of the control

Table 3

Gates-McGinitie Reading Tests
All Program Students - Neediest and Selected - t-test

Grade		Vocabulary				Comprehension			
		$\bar{X}$	SD	$\bar{X}$ GE	t	$\bar{X}$	SD	$\bar{X}$ GE	t
1 (N = 100)	Pre	10.53	5.02	-	15.45*	3.93	3.70	-	8.93*
	Post	24.41	10.39	-		12.52	8.85	-	
2 (N = 142)	Pre	13.61	6.27	1.5	14.75*	6.42	4.36	1.3	12.88*
	Post	23.61	9.52	2.3		12.75	6.52	1.9	
3 (N = 136)	Pre	14.98	6.62	1.8	13.12*	8.02	5.90	1.5	14.40*
	Post	24.15	8.14	2.7		17.23	7.90	2.4	
4 (N = 167)	Pre	11.87	7.68	2.9	15.25*	12.08	7.57	2.5	15.28*
	Post	29.87	7.31	3.9		21.80	9.06	3.5	
5 (N = 108)	Pre	18.05	6.47	3.5	9.37*	18.23	8.23	3.0	10.95*
	Post	23.84	7.00	4.5		26.49	9.41	4.1	
6 (N = 116)	Pre	22.32	6.82	4.3	8.14*	25.41	9.42	4.0	9.00*
	Post	28.47	8.47	5.3		33.32	8.64	5.2	

* $p < .001$

Table 4

Gates-McGinitie Reading Tests
Neediest Students - t-test

Grade		Vocabulary				Comprehension			
		$\bar{X}$	SD	$\bar{X}$ GE	t	$\bar{X}$	SD	$\bar{X}$ GE	t
1 (N = 22)	Pre	11.41	6.81	-	5.94*	4.27	3.63	-	5.01*
	Post	25.24	11.36	-		11.80	6.69		
2 (N = 56)	Pre	12.34	5.98	1.4	8.02*	5.46	4.07	1.2	7.64*
	Post	22.46	10.51	2.2		11.50	6.27	1.7	
3 (N = 52)	Pre	14.67	5.87	1.8	8.59*	8.37	6.16	1.4	9.03*
	Post	22.71	8.93	2.6		16.71	8.48	2.3	
4 (N = 38)	Pre	11.37	5.81	2.8	6.75*	10.61	5.75	2.3	6.04*
	Post	18.63	5.41	3.7		19.58	6.81	3.2	
5 (N = 33)	Pre	16.79	6.43	3.4	6.41*	16.91	6.72	2.9	6.29*
	Post	23.18	7.17	4.5		24.88	9.36	3.9	
6 (N = 29)	Pre	22.92	5.93	4.3	5.07*	25.32	8.93	3.8	5.09*
	Post	27.07	6.62	5.1		34.04	7.11	5.2	

* $p < .001$

Figure 1

Mean Grade Equivalent Scores Pre and Post on
Gates-McGinitie Reading Tests
Vocabulary and Comprehension Subtests - Grades 2-6

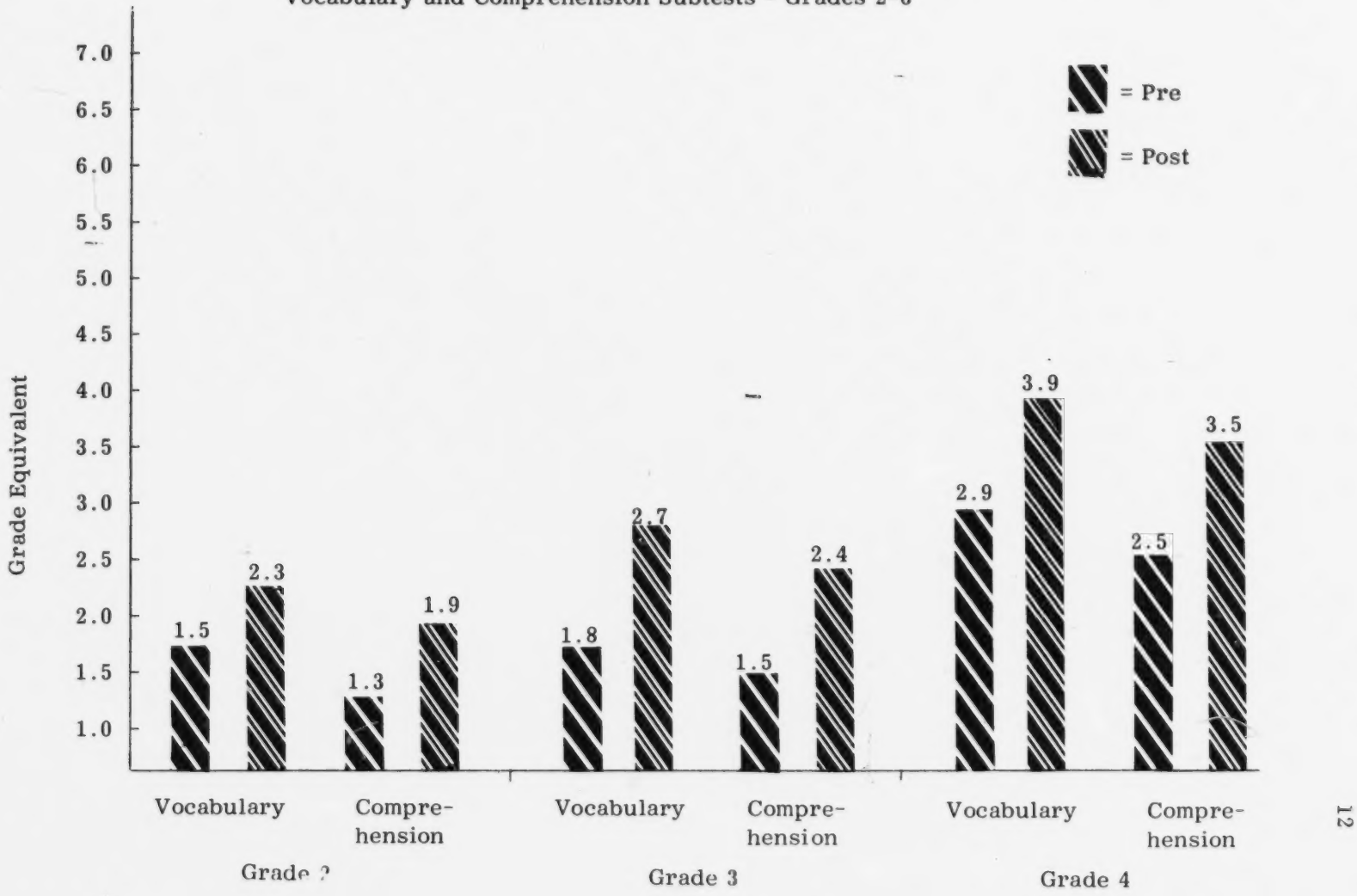

Figure 1 (Cont.)

Mean Grade Equivalent Scores Pre and Post on
Gates-McGinitie Reading Tests
Vocabulary and Comprehension Subtests - Grades 2-6

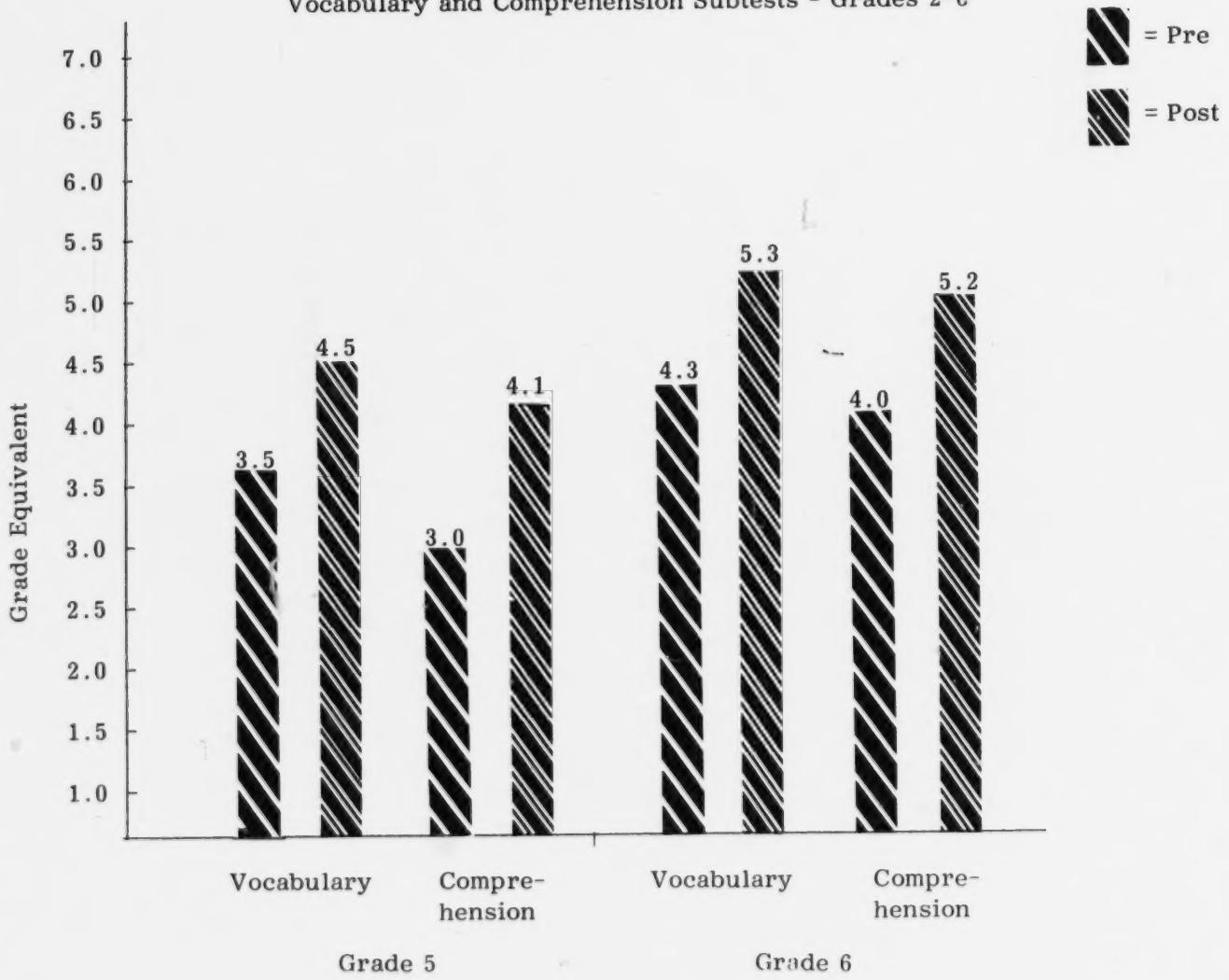

Table 5

Comparison of Selected and Control Groups
Pre- and Post-Test Raw Score Means and Standard Deviations
Gates-McGinitie Reading Tests
Vocabulary Subtest

Grade	Selected						Control					
	N	Pre $\bar{X}$	Pre SD	Post $\bar{X}$	Post SD	Adjusted Post $\bar{X}$	N	Pre $\bar{X}$	Pre SD	Post $\bar{X}$	Post SD	Adjusted Post $\bar{X}$
1	77	10.10	4.13	27.12	9.72	27.78	67	11.82	5.31	26.36	10.39	25.60
2	86	14.44	6.34	24.35	8.78	24.31	70	14.33	6.69	24.47	9.02	24.52
3	83	15.01	6.98	25.01	7.56	26.12	95	18.79	8.05	25.56	7.67	24.64
4	120	12.99	6.98	20.26	7.58	21.20	95	15.68	7.01	20.94	7.03	19.75
5	74	15.85	6.49	24.46	6.39	24.82	60	19.80	6.57	23.45	7.43	23.01
6	84	22.88	5.89	29.46	8.43	30.75	71	26.18	6.85	28.86	8.05	27.34

Table 6

Comparison of Selected and Control Groups
Pre- and Post-Test Raw Score Means and Standard Deviations
Gates-McGinitie Reading Tests
Comprehension Subtest

Grade	Selected						Control					
	N	Pre $\bar{X}$	Pre SD	Post $\bar{X}$	Post SD	Adjusted Post $\bar{X}$	N	Pre $\bar{X}$	Pre SD	Post $\bar{X}$	Post SD	Adjusted Post $\bar{X}$
1	74	3.84	3.52	13.00	9.48	13.17	60	4.75	3.99	12.72	6.96	12.51
2	85	7.13	4.42	13.67	6.56	13.51	70	6.57	4.62	13.69	6.80	13.88
3	82	7.78	5.66	17.73	7.43	18.86	96	11.32	7.53	19.45	8.36	18.49
4	120	13.39	7.58	22.26	9.30	24.21	95	18.32	7.92	23.31	9.15	20.83
5	72	19.24	8.36	27.72	8.99	28.46	60	21.18	7.78	27.02	8.96	26.13
6	84	26.38	8.53	33.64	8.53	35.02	71	30.85	8.92	34.75	9.16	33.12

Table 7

Analysis of Covariance Between Post-Test Mean Scores of Selected and Control Groups on Vocabulary and Comprehension Subtests - Gates-McGinitie Reading Tests

Grade	Vocabulary			Comprehension		
	Degrees of Freedom	F-Ratio	Significance	Degrees of Freedom	F-Ratio	Significance
1	1-141	1.290	> .05	1-131	0.202	> .05
2	1-153	0.038	> .05	1-152	0.143	> .05
3	1-175	2.162	> .05	1.175	0.122	> .05
4	1-212	4.618	< .05	1-212	14.843	< .001
5	1-131	3.747	< .05	1-129	4.384	< .05
6	1-152	10.687	< .001	1-152	2.973	< .10

group, the F-ratios obtained from the analyses of covariance were not statistically significant in all cases. Table 7 reports that, according to the analysis of covariance, the fourth, fifth, and sixth grade selected students performed better than the control students at a statistically significant level on the Vocabulary subtest; the fourth and fifth grade selected students performed better than the control students on the Comprehension subtest. It is important to note at this point that recent evidence (Donald T. Campbell and Albert Erlebacher, in "How Regression Artifacts in Quasi-Experimental Evaluation Can Mistakenly Make Compensatory Education Look Harmful") shows that the analysis of covariance does not mathematically adjust to a sufficiently high level, the post-test mean score for the group which had the lower pre-test mean score. This limitation may be preventing statistically significant gains from being identified for Grades 1-3 in both skill areas, and for Grade 6 in Comprehension because the selected group's post-test mean scores would not be adjusted sufficiently high to allow a statistically significant F-ratio.

Because of these statistical limitations, the evaluators have performed a series of statistical analyses to determine if other evidence supports the difference between selected and control groups suggested by the data in Table 5 and 6 but only partially confirmed by the F-ratios in Table 7.

Discussion of Analyses of Covariance. One consideration was that the control group included some students who were receiving help from the Reading Resource Teachers and, therefore, should not be included in a "no help" control group. The control groups in Grades 1, 2, and 3 included significant numbers of these students. (In Grade 1, control students receiving help and not receiving help were equal in number; for Grades 2 and 3, twice as many control students received extra help as did not; for Grades 4, 5, and 6, the number of control students receiving additional instruction was negligible.) Therefore, an analysis of covariance between the scores of selected students and the scores of control students who did not receive instruction from the Reading Resource teachers, in Grades 1-3, was performed and is reported in Table 8. The results suggest that inclusion of control students receiving remedial instruction from the Reading Resource teachers affect only the scores on the Vocabulary subtest; therefore, the composition of the control group seems to have a limited relationship to the significance of the difference between selected and control student performance.

Additional evidence of the impact of the ORB Program on its participants is suggested by the comparison of gains in mean grade equivalent scores from pre- to post-tests for the selected and control groups. A review of Tables 9 and 10, which present these analyses, suggests that for Grades 3, 4, 5, and 6, the selected group gained more than the control group in both skill areas. (As noted above, no transformation of the Grade 1 mean raw scores to grade equivalent scores was made.) Tables 9 and 10 show that the adjusted post-test mean grade equivalent for selected students in Grades 3-6 was greater than that for the control students in these grades. These results confirm the impact of the ORB Program on the students in Grades 4 to 6, and provide further evidence that the program had an impact on the Grade 3 students.

Table 8

Analysis of Covariance Between Post-Test Mean Raw Scores
(Using Pre-Test Scores as Statistical Covariants) of Selected
and Control (No-Help) Students on Vocabulary and Comprehension Subtests
Gates-McGinitie Reading Tests (Grades 1-3 Only)

Grade	Vocabulary			Comprehension		
	Degrees of Freedom	F-Ratio	Significance	Degrees of Freedom	F-Ratio	Significance
1	1-106	4.352	< .05	1-100	0.622	> .05
2	1-118	1.172	> .05	1-117	0.288	> .05
3	1-141	0.275	> .05	1-140	0.935	> .05

Table 9

Comparison of Gains in Mean Grade Equivalent Scores
and Months Gained From Pre to Post Tests For
Selected and Control Students - Gates-McGinitie Reading Tests
Vocabulary Subtest

Grade	Selected					Control				
	N	Pre $\bar{X}$	Post $\bar{X}$	Months Difference	Adjusted Post $\bar{X}$	N	Pre $\bar{X}$	Post $\bar{X}$	Months Difference	Adjusted Post $\bar{X}$
2	86	1.1	1.8	7	1.8	70	1.1	1.9	8	1.9
3	82	1.4	2.4	10	2.5	95	1.7	2.4	7	2.3
4	125	2.6	3.6	10	3.8	95	2.9	3.7	8	3.6
5	74	3.1	4.3	12	4.3	60	3.5	4.1	6	4.0
6	87	4.3	5.5	12	5.8	71	5.0	5.6	6	5.2

Table 10

Comparison of Gains in Mean Grade Equivalent Scores
and Months Gained From Pre to Post Tests For
Selected and Control Students - Gates-McGinitie Reading Tests
Comprehension Subtest

Grade	Selected					Control				
	N	Pre $\overline{X}$	Post $\overline{X}$	Months Difference	Adjusted Post $\overline{X}$	N	Pre $\overline{X}$	Post $\overline{X}$	Months Difference	Adjusted Post $\overline{X}$
2	79	1.1	1.5	4	1.5	65	1.1	1.6	5	1.6
3	71	1.2	2.0	8	2.1	89	1.5	2.2	7	2.2
4	123	2.3	3.3	10	3.4	95	2.6	3.2	6	3.0
5	72	2.8	3.8	10	3.9	60	3.0	3.9	9	3.8
6	87	4.0	5.3	13	5.5	71	4.8	5.6	8	5.3

Analyses which offer additional verification of the effectiveness of the ORB Program are summarized in Tables 11-13. T-tests for uncorrelated data were used to compare the pre-test scores of the selected and control groups and also the post-test scores of the two groups on the Vocabulary and Comprehenson subtests (Tables 11 and 12).

Table 11 shows that a statistically significant difference existed between the pre-test mean scores on the Vocabulary subtest of the selected and control groups in Grades 1, 3, 4, and 6, with the control group performing significantly better than the selected group. A review of the results of the t-tests for uncorrelated data on the post-test scores shows that no statistically significant difference existed between the scores of the selected and control groups at any grade level. These data contribute to the conclusion that the program students did improve their reading skills more than the control group. Similarly, as shown in Table 12, there was a statistically significant difference between the pre-test scores of the selected and control students, in Grades 3, 4, and 6, on the Comprehension subtest. As in the case of the Vocabulary subtest, there was no statistically significant difference between the post-test scores of these two groups at any grade level on the Comprehension subtest. These results also support the conclusion that the ORB Program was highly effective in improving student reading achievement. Table 13 summarizes the data presented in Tables 11 and 12.

A consideration of all analyses of the data from standardized achievement tests suggests that the ORB Program was very effective in improving the student achievement in reading.

Analysis of Final Grades

In order to evaluate Objective 2--"The students' grades in other subjects will improve as reading skills improve"--the final grades of ORB students for 1971-1972 were compared to their 1970-1971 final grades by a sign test for correlated data. It is important to note that in some of the schools the traditional A to E grades are not assigned; instead, numerical ratings of 1, 2, or 3 are used. In order to analyze all data together, the evaluators converted these numerical ratings to the letter grades of A, C, and E, respectively. The evaluators note that these conversions are artificial and for the purpose of data analysis only. Because of the increasing trend to de-emphasize final grades, and to emphasize a continuous non-graded approach to education, Objective 2 should be revised so that its wording is congruent with this new assessment philosophy.

A summary of the analysis of the final grades is presented in Table 14. Tables A-F in the Appendix present the sign test analyses for Grades 1 to 6. Table 14 reports for each grade whether a statistically significant difference existed between 1970-1971 and 1971-1972 final grades for each appropriate subject area. (A hyphen denotes a subject area in which students were not assigned grades.) A review of Table 14 indicates a pattern of improvement in Reading.

Table 11

Results of t-tests for Uncorrelated Data Between Pre-Test and Post-Test of Selected and Control Groups on the Vocabulary Subtest of the Gates-McGinitie Reading Test

Grade	Group	N	$\bar{X}$	SD	t	N	$\bar{X}$	SD	t
1.	Selected	78	10.28	4.36	-1.98*	77	27.12	9.66	0.45 NS
	Control	68	11.87	5.24		67	26.36	10.31	
2.	Selected	86	14.44	6.31	0.08 NS	86	24.35	8.73	-0.09 NS
	Control	72	14.36	6.55		70	24.47	8.96	
3.	Selected	83	15.01	6.94	-3.31**	83	25.07	7.51	-0.41 NS
	Control	95	18.78	8.01		96	25.54	7.60	
4.	Selected	121	12.95	6.93	-2.85	128	20.39	7.56	-0.47 NS
	Control	96	15.67	6.94		96	20.85	7.01	
5.	Selected	75	18.60	6.41	-1.07 NS	74	24.46	6.35	0.84 NS
	Control	60	19.80	6.51		60	23.45	7.37	
6.	Selected	85	22.91	5.82	-3.22**	87	29.25	8.43	0.42 NS
	Control	71	26.16	6.80		72	28.69	8.06	

NS - Not Significant * $p < .01$ ** $p < .001$

Table 12

Results of t-tests for Uncorrelated Data Between Pre-Test and Post-Test of Selected and Control Groups on the Comprehension Subtest of the Gates-McGinitie Reading Test

Grade Group	N	$\bar{X}$	SD	t	N	$\bar{X}$	SD	t
1. Selected	75	3.99	3.70	-1.18 NS	77	12.97	9.30	0.58 NS
Control	62	4.77	4.02		66	12.17	6.90	
2. Selected	85	7.13	4.39	0.78 NS	86	13.58	6.56	-0.12 NS
Control	72	6.57	4.54		70	13.69	6.75	
3. Selected	82	7.78	5.62	-3.50**	83	17.54	7.54	-1.59 NS
Control	96	11.32	7.49		96	19.45	8.31	
4. Selected	121	13.34	7.54	-4.57**	128	22.63	9.36	-0.53 NS
Control	96	18.19	7.94		96	23.29	9.05	
5. Selected	73	19.33	8.28	-1.39 NS	74	25.57	8.85	0.35 NS
Control	60	21.18	7.71		60	27.02	8.88	
6. Selected	85	26.34	8.43	-3.23*	87	33.47	8.38	-0.64 NS
Control	71	30.85	8.85		72	34.39	9.52	

NS - Not Significant * $p < .01$ ** $p < .001$

Table 13

Summary of t-tests for Uncorrelated Data Used to Compare Pre- and Post-Test Raw Scores of Selected and Control Groups on the Gates-McGinitie Reading Tests

Grade	Vocabulary		Comprehension	
	Pre	Post	Pre	Post
1	Yes*	No	No	No
2	No	No	No	No
3	Yes*	No	Yes*	No
4	Yes*	No	Yes*	No
5	No	No	No	No
6	Yes*	No	Yes*	No

* E < C
* Significant difference favoring the control group

Table 14

Summary of Statistically Significant Positive Change in Program Students' Final Grades From 1970-1971 to 1971-1972

Grade	Was Change Statistically Significant?						
	Reading	Arithmetic	Language	Spelling	Social Studies	Conduct	Effort
1	Yes	Yes	No	-	-	No	No
2	Yes	Yes	Yes	No	No	No	No
3	Yes	No	Yes	Yes	Yes	No	No
4	Yes	Yes	No	No	No	No	No
5	No	Yes	Yes	No	Yes	No	No
6	No	No	No	No	No	No	No

Arithmetic, and Language in Grades 1-5. The ORB Program seemed to have the least impact on improving final grades of Sixth Grade students, and no statistically significant improvement occurred in any subject. Similarly, at all grade levels, no change occurred in the final grades for conduct or effort. These data suggest that while Objective 2 was only partially accomplished, the impact was of considerable practical importance because students improved their final grades in the fundamental skill areas of reading, arithmetic and language.

Analysis of Ratings on Behavioral Objectives Checklists

Interim testing in the ORB Program involved each First, Second, and Third Grade teacher rating a sample of eight students in her class on a series of behavioral objectives which curriculum committees had identified as appropriate goals of instruction at each grade level. The percentage of students receiving each rating for each objective was reported to the Project Coordinator in April, 1972, and is included along with final ratings in Tables J-N in the Appendix. In order to determine if any gain in reading skills occurred from the time of the interim testing to the end of the program, each teacher rated the same eight students on the behavioral objectives for their grade in June, 1972. The performance of First and Third Grade students on an objective was assessed in one of two ways, determined by the objective.

1. The students were rated as to whether they could or could not perform the objective, or

2. The attainment of the objective was rated on a scale of 1-5 in relation to the attainment of the objective by other students in the class (1 represents poor performance, and 5 describes the best performance of the objective in the class; 2, 3, and 4 define points in the middle of the continuum).

Each Grade 2 student received a rating of 1-5 for their performance of each objective.

For each objective at each grade level, a sign test for correlated data was used to determine whether a statistically significant number of students improved their ratings from the interim to the final testing. The sign test analyses by grade level and by objective are presented in the Appendix in Tables G-I. Table 15 presents for each grade level the percentage of objectives for which the sign test was statistically significant at a minimum of the .05 level. These data suggest that between interim and final testings, students acquired additional reading skills. Special increases were noted for the Grade 2 students, as 65% of the second grade objectives had a statistically significant z. The evaluators recommend that every attempt be made to use these objectives as the focus of program instruction and assessment during the entire program year. They should be reviewed for appropriateness and completeness by the program teachers and coordinator and a revised

list formulated including objectives for Grades 4-6. For use in reviewing the appropriateness of each objective, Tables J-N in the Appendix present, by objective, the percentage of students who received each rating at the time of the interim testing and at the time of the final testing.

Table 15

Percentage of Behavioral Objectives With Statistically Significant Increase in the Number of Students Demonstrating Mastery of the Behavior Sign Test

Grade	Total Number of Objectives	Percentage of Objectives With Significant z
1	25	32
2	20	65
3	25	50

Student Achievement: Affective Domain

The ORB Program also attempted to improve student attitude toward school and self as learner, to increase student attendance, and to reduce anti-social behavior. Two objectives were formulated for this domain and were assessed through the completion of attitude scales and a review of attendance data.

Analysis of Teacher Rating of Student Classroom Behavior

The third objective, "The students' attitude toward school will be improved when opportunity for success becomes greater," was evaluated by analyzing Teacher Rating of Student Classroom Behavior, completed by regular classroom teachers, pre and post, in November, 1971 and May, 1972, respectively. This twelve-item scale is composed of two subscales: 1) Attitude Toward School and 2) Attitude Toward Self as Learner. For each child the teacher was requested to indicate whether he "strongly agreed," "agreed," "disagreed," or "strongly disagreed" with each of the twelve statements on the scale. A rating of +2 to -2 was assigned to each response, according to whether it reflected a positive or a negative attitude of the student. These scores were then summed for the items on each of the subtests. The score on the five-item Attitude Toward School subscale, which included such statements as "He likes school" and "He thinks that school is uninteresting," could vary from -10 to +10, reflecting a negative to positive attitude toward school, respectively. The Attitude Toward Self as Learner subscale, with seven items, including "He often gets discouraged in class" and "He works up to his ability," could range from -14 to -14, reflecting a highly negative to highly positive attitude toward self as learner.

Table 16, which summarizes the t-tests for correlated data used to compare pre- and post-ratings by grade level on the Attitude Toward School scale reports a statistically significant change in attitude for Grades 1 and 2 only. Grade 1 students showed positive change in attitude whereas Grade 2 students showed negative change. Because of the lack of a consistent direction in the change of student attitude toward school, it is difficult to explain the results or to relate them to particular processes in the classroom. It is important to note that in all cases both pre and post attitudes toward school were positive, making positive change unlikely.

Table 17, which reflects changes in the students' attitudes toward themselves as learners, showed a similar lack of consistency in the difference between pre and post ratings at different grade levels. Only the Grade 3 and 5 students demonstrated a statistically significant difference between pre and post attitude toward self as learner. The Third Graders showed a positive change, whereas Fifth Graders showed a negative change. Again, it is difficult to explain these results in terms of the particular processes used in the ORB Program. The evaluators recommend, however, that if improvement of attitude toward school and attitude toward self as learner remain objectives of the program, specific steps should be taken to accomplish them.

Table 16

Comparision of Pre and Post Ratings of
Student Classroom Behavior, by Regular Classroom Teachers
Attitude Toward School

—		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Pre	N	100	124	133	93	86	84
	$\bar{X}$	3.39	3.40	3.29	2.17	1.99	1.65
	SD	3.07	3.63	3.61	4.24	4.87	3.89
Post	$\bar{X}$	4.76	2.58	3.45	1.67	0.84	2.07
	SD	3.94	4.51	3.86	4.39	4.21	3.64
	t	3.160**	2.053*	0.440 NS	1.003 NS	1.919 NS	0.959 NS

NS - Not Significant * $p < .05$ ** $p < .01$

Table 17

Comparision of Pre and Post Ratings of
Student Classroom Behavior, by Regular Classroom Teachers
Attitude Toward Self as Learner

		Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Pre	N	100	123	133	93	86	84
	$\bar{X}$	3.20	0.85	0.51	0.78	-0.02	-0.11
	SD	5.26	6.05	5.49	5.09	7.03	5.81
Post	$\bar{X}$	3.15	0.97	2.41	0.22	-2.20	-.10
	SD	5.58	6.57	5.77	5.49	5.96	5.92
	t	1.702 NS	0.196 NS	3.777**	1.032 NS	2.584*	0.294 NS

NS - Not Significant * $p < .05$ ** $p < .001$

The third program objective was accomplished to a very limited degree as only one grade demonstrated improvement in attitude toward school, and another, improvement in attitude toward self as learner.

Analysis of Student Attendance Data

The fourth objective of the ORB Program focused on improving student attendance and reducing participants' anti-social behavior. The project's rationale was that provision of extra attention and success experiences for the student would result in improving their attitude toward school, and, consequently, their attendance.

A t-test for correlated data was used to compare the number of days program students were absent from school, during the 1971-1972 school year--the year of ORB Program participation--to the number of absences during the 1970-1971 school year. Table 18 summarizes these tests of significance and reports the mean number of days students were absent during the two years. A review of Table 18 indicates that for all program students, a statistically significant difference favoring the 1971-1972 school year existed. This analysis suggests that at least part of objective four was accomplished. A more detailed analysis of attendance, by grade (Table 18), shows a statistically significant difference between attendance in 1971-1972 for students in Grades 2, 3, and 6. Their attendance improved during the program year, with the mean number of days absent being less in 1971-1972 than in 1970-1971.

Analysis of the Pupil Behavior Inventory Scores

As part of the measurement of the fourth objective, the Pupil Behavior Inventory was also completed as a pre-test and post-test, in November, 1971, and May, 1972, by each ORB student's regular classroom teacher. This scale is composed of four subscales: Classroom Conduct, Academic Motivation and Performance, Socio-Emotional State, and Teacher Dependence.

For each item on the Inventory the teacher indicates whether the student demonstrates the behavior "very frequently," "frequently," "sometimes," "infrequently," or "very infrequently." These ratings are transformed into a numerical scale ranging from 5 to 1, with 5 representing either a very frequent demonstration of a positive behavior, such as "shows initiative," or a very infrequent demonstration of a negative behavior, such as "disrupts classroom procedures." The ratings for all items in a dimension are summed; this total is then divided by the number of items in the dimension, yielding a dimension score between 5 and 1, with 5 representing extremely desirable behavior, and 1 representing extremely undesirable behavior.

Table 18

A Comparison of 1971-1972
Program Student Attendance

Grade	Days Absent 1970-1971		Days Absent 1971-1972		
	$\bar{X}$	SD	$\bar{X}$	SD	t
1 (N=51)	24.75	16.69	18.61	12.61	1.781 NS
2 (N=123)	20.85	15.87	15.99	14.99	3.790*
3 (N=131)	18.79	17.79	12.37	13.18	5.389*
4 (N=123)	13.228	12.834	12.407	13.429	0.623 NS
5 (N=106)	14.95	15.61	13.91	11.99	0.738 NS
5 (N=91)	13.91	12.59	10.76	12.66	2.716*
Total (N=)	17.25	15.79	13.64	13.81	6.625*

NS - Not Significant
* $p < .001$

Tests for reliability and validity indicated that the Pupil Behavior Inventory meets the criteria for a reliable and valid measurement instrument. Reliability was determined, using a modified split-half analysis, by dividing in half randomly both a normal group and a malperforming group of students and then using a t-test to compare, within each group, the performance of the two halves. Only two of the thirty-two comparisons reflected statistically significant differences, confirming the high reliability of the Inventory. The validity of the test was determined by comparing the performance of a group of students identified as normal and another identified as malperforming on this test. The statistically significant difference between the performance of the two groups according to their ratings on the Inventory reflects its validity.

To determine the effect of program participation on anti-social behavior in students, a t-test for correlated data was used to compare pre and post scores on the Pupil Behavior Inventory.

The Classroom Conduct dimension is a 12-item scale which assesses the classroom behavior of a student by rating his behavior among other students and his relationship to the teacher. Two examples of items on this scale are "resistant to teacher" and "aggressive toward peers."

The Academic Motivation and Performance dimension "focuses on the pupil's motivation toward and performance of academic tasks." This dimension includes such items as "hesitant to try, or gives up easily," and "uninterested in subject matter." The test manual notes, "Although ratings of pupils on this dimension should correlate closely with course grades, experience suggests that the PBI is more sensitive to teacher perceptions of changes in student motivation than course grades."

The Socio-Emotional State dimension includes five items designed to assess the emotional and social adjustment of the student, especially his interaction with his peers. Items in this dimension include "friendly and well received by other pupils," and "isolated, few or no friends."

The fourth dimension assessed was Teacher Dependence, which provides a measure of the student's need for reassurance from the teacher. This dimension contains only two items: "seeks constant reassurance" and "possessive of teacher." The manual suggests that this dimension successfully identifies withdrawn behavior. The evaluators note that, in most cases where a program encourages a child to seek reassurance and help from a teacher, the scores on this dimension should decrease. In addition, one might expect that older students would receive higher scores on this dimension than younger students who, because of age and lack of experience, would generally be more dependent upon the teacher.

For each dimension a t-test for correlated data was used to compare pre- and post-test mean scores. A review of Table 19 indicates that only for the Socio-Emotional State and Teacher Dependence dimensions did a statistically significant difference exist between pre- and post-test scores. For the Socio-Emotional State dimension the post-test mean score was higher than the pre-test mean score, reflecting higher teacher rating of Socio-Emotional State. This improved social-emotional behavior suggests that the positive reinforcement and success experiences provided by the ORB teachers had a positive impact on the students. The reduction in rating of teacher dependence most likely reflects the students' increased ability to relate to the teachers, also a positive outcome. The Classroom Conduct ratings remained the same and the Academic Motivation and Performance mean ratings declined from pre- to post-test.

Table 19

Comparison of Pre and Post Scores of
Program Students on Pupil Behavior Inventory
(N = 611)

Dimension	Pre-Test		Post-Test		
	$\bar{X}$	SD	$\bar{X}$	SD	t
Classroom Conduct	3.409	0.747	3.413	0.978	0.139 NS
Academic Motivation and Performance	3.512	0.803	2.888	0.897	1.769*
Socio-Emotional State	3.512	0.658	3.686	0.770	5.824*
Teacher Dependence	3.777	0.903	3.125	0.959	13.323*

NS - Not Significant
* $p < .001$

Evaluators feel that one explanation for the inability of the program to reduce student anti-social behavior in all areas measured by the Pupil Behavior Inventory may be the lack of specific processes focused on this goal. Observation of program classes suggests that, although many of the teachers provided positive reinforcement and success experiences for the students, these processes might have reduced anti-social behavior only in the ORB classroom without any carryover to the regular classes except for the students' socio-emotional state. The evaluators feel that the accomplishment of this objective depends on the introduction of specific activities and processes designed to reduce anti-social behavior. Such activities should include processes which would extend the reduction of anti-social behavior to the students' regular classroom.

STUDENT ACHIEVEMENT: SUMMARY

The analyses of achievement data indicate that the ORB Program had a significant impact on the cognitive skill development of the students. Not only did program students gain at least one month in mean grade equivalent score on the Vocabulary and Comprehension subtests of the Gates-McGinitie Reading Tests for each month of program participation, but they performed better than a comparable control group on this standardized achievement test. Gains were also reflected in final grades of students in Grades 1-5 and by the specific behavioral objectives, particularly for Grade 2 students. It is therefore concluded that the program was highly successful in achieving the stated cognitive objectives.

The impact of the program on the affective domain was more limited. Although a reduction in absenteeism occurred, no substantive improvement in attitude toward school or attitude toward self as learner, or reduction in anti-social behavior was effected.

CLASSROOM OBSERVATIONS

One of the major evaluation activities was on-site observation of program classes for the purpose of documenting the type of instructional activities and materials used in the program. Because a detailed discussion of these observations was presented in the Interim Report, completed and submitted in April, 1972, only a brief listing of the observation findings is recorded here and, where appropriate, related to achievement findings. (If the reader is interested in a detailed discussion of classroom observations, accompanied by a documentation of occurrence for each class, he should review Appendix A which excerpts relevant sections of the Interim Evaluation Report.)

1. Program scheduling varied in different classes, the most common scheduling was five periods of instruction daily for six students each, although class size frequently decreased because of student absences. The evaluators feel that the most satisfactory schedule was a rotating one in which students received instruction at different times each day of the week so that they did not miss the same classroom activities each day during the ORB period. Sufficient cooperation existed between the ORB staff and the regular classroom teachers, so that ORB classes were scheduled at the optimum time for both of these groups, as well as for the ORB students. In some cases, however, ORB teachers did not receive as much cooperation from the school principals and classroom teachers as would have been desirable for maximum program effectiveness.

2. The student selection process for the program has been described in this final report's section, "Participants." Formulation of a list of recommended students was based on different considerations in each school, including recommendations of principals and classroom teachers, and available achievement scores or other ratings of reading performance. Receiving greatest consideration were the recommendations of the 1971-1972 classroom teacher, who had only a brief acquaintance with students in her class before being asked to make recommendations for the ORB Program. Evaluators suggested in the Interim Report that recommendations of ORB students be made by the classroom teacher of the year prior to program operation, for example, by the 1971-1972 classroom teachers for the 1972-1973 ORB Program. A final validation of eligibility and formulation of a list of students could then be made by the current classroom teacher and school principal. The evaluators also noted the need for more stringent and uniform criteria in the identification and selection of pupils for participation. Selection of inappropriate students may have prevented even greater gains, since some students with severe emotional problems were selected for the program.

3. Program effectiveness was primarily a function of teacher talent although other factors, such as classroom facilities, cooperation between ORB teachers and classroom teachers, and cooperation between ORB teachers and reading resource teachers, contributed to it. Considering the success of the ORB Program as reflected by achievement data, it may be concluded that teacher talent and communications were excellent.

4. Although individualized instruction was a goal of the program, the relatively inexperienced ORB teachers had difficulty implementing it. During the year increasing individualization of instruction was observed as the teachers became more experienced and comfortable in the classroom and with the program. Nevertheless, the evaluators noted the need for greater individualization in the program and suggest that this be encouraged during the 1972-1973 school year.

5. The activities most frequently observed in ORB classes were the students' completing of individual reading assignments, reading of texts as a group, working with flashcards or word drills, completing worksheets, and playing games. The frequency of performance of each of these activities within each classroom varied. Table 20 shows, for each activity, the percentage of classes receiving each of four ratings (0= no occurrence, 1= some occurrence, 2= moderate occurrence, and 3= extensive occurrence). This table suggests that greater emphasis was placed on using individual reading assignments and playing games, and less on reading texts as a class, using flash cards or word drills, and completing worksheets. The evaluators feel that the use of individual reading assignments reflects some individualization of instruction, but that greater individualization might result in greater achievement gains by program students. The playing of games was popular as a means of improving student attitude toward reading yet the lack of positive improvement in student attitude toward school and self as a learner suggests that this process did not result in significant improvement in attitude.

The presence of other characterisitics in the classrooms is described in Table 21. The evaluators feel that using audio-visual equipment, varying activities during the instructional period, employing innovative techniques in instruction, providing success experiences for students, and conducting individualized instruction are positive characteristics of a classroom; ideally, all classrooms should receive ratings of 3 on these factors. A review of Table 21 indicates, however, that fewer than one-half of the classes were characterized by either moderate or extensive use of these instructional activities. Increasing the use of these activities might lead to academic gains and improved program operation.

Table 20

Classroom Activities and Materials
Rating Percentages

Category	Rating			
	0	1	2	3
Individual Reading Assignment	31	17	41	10
Reading Text as Class	62	31	6	0
Flashcards or Word Drills	48	41	10	0
Worksheets	17	79	3	0
Games	17	44	34	3

Table 21

Classroom Characteristics Rating Percentages

Category	Rating			
	0	1	2	3
Use of Audio/Visual Equipment	48	27	24	3
Varies Activities During Program	10	44	41	3
Innovative Techniques	44	27	24	3
Success Experiences	3	55	41	0
Individualization	17	41	31	10
Availability of Classroom	45	28	24	3

ATTITUDES AND OPINIONS

Data on attitudes and opinions were collected through the administration of questionnaires to ORB teachers, students' classroom teachers, school principals, parents, and through informal interviews with project personnel, conducted periodically during the program year.

In December, 1971, a detailed questionnaire was distributed to all ORB teachers to determine their reactions to various aspects of the program. The responses to this questionnaire were then analyzed in a written process report as part of the formative assessment of the program. A follow-up on problems identified in the section title "Formative Evaluation Activities and Findings" indicates that, in general, attitudes toward these problems changed because of corrective action implemented in the program--for example, materials were secured and communication within the program was increased through regular in-service and staff meetings.

The questionnaire completed by 21 teachers in May, 1972 encouraged them to cite strengths and weaknesses of various aspects of the program and to offer suggestions for program modifications. The 53 classroom teachers, 15 school principals and 226 parents who returned post-program questionnaires reacted to a series of statements about various aspects of the program. A discussion of these reactions, by topic, follows.

Program Implemention: Scheduling

Different schedules were followed in different schools, according to their individual characteristics. ORB teachers were asked to describe the size, length, and frequency of their classes. The number of classes conducted by each teacher ranged from five to eight, with class size ranging from four to six; the largest concentration of classes was in the 5-daily group, followed by six, seven, and eight in decreasing order of occurrence. Usual class size was six students, followed by five and four. Most classes met for forty-five minutes daily, although four teachers held classes for forty minutes, three for thirty-five, and one for fifty minutes a day. In general, the larger the number of classes scheduled daily the smaller the class size and the shorter the instructional period.

In contrast, when questioned about the optimum number of students to be served per period and the optimum length of instructional time, the majority of ORB teachers felt that four students should be served; five, six and three were the other responses cited in decreasing order of preference by the ORB teachers. An equal percentage of ORB teachers felt periods of thirty, forty, and forty-five minutes would be ideal. The majority of teachers (90%) saw each student daily, although a few teachers saw the students less frequently. One teacher reported

teaching five percent of her students only two days a week. Other teachers reported teaching from five to ten percent of their students three days a week. The evaluators feel that all students, unless absent from school, should attend ORB classes daily, since less than regular attendance may limit program impact. When questioned about the minimum number of times they should work with each student during the week, one teacher said two, seven teachers said three, six said four, and eight said five. All but one teacher agreed that the maximum number of sessions per week should be five.

Classroom teachers were asked to suggest ways for improving the ORB class schedule so that it would be better suited to student needs. The most frequent response reflected satisfaction with the current schedule. Other suggestions, each generally made by one teacher, included admitting and dismissing students at various points during the school year, developing a more flexible schedule, having the program teachers work with the entire reading group, and increasing the relationship between the ORB lessons and the classroom lessons. The evaluators concur with the last suggestion. In many cases this relationship existed, but was limited. The evaluators, as well as Title I guidelines, disagree with the suggestions of admitting and discharging students during the program year and of teaching the entire reading group. The evaluators feel that emphasis should continue to be placed on teaching a limited number of students for the entire school year; too often when the students are returned to the classroom they immediately begin to perform poorly. It has been shown that short term instruction has only a short term effect and, therefore, should not be encouraged.

Program Implementation: Administration

The ORB teachers and the school principals were encouraged to react to the administration of the program, to the role of the project coordinator and its impact on project operation, to the general planning and structuring of the program, to the role of the school principal, and to impact of the program in the school. The ORB teachers reported that the project coordinator had been of great assistance in providing materials, general help, and advice when needed. Typical responses indicated that she was helpful in:

> "Either answering questions or being able to direct me to where I could get my questions answered."
>
> "1) Securing supplies, 2) helping in creating my program, 3) advice on teaching problem learners, 4) general support."
>
> "An all-round general way of helping me most when I need it."

Other teachers commented that she had served as liaison among ORB teachers, checked on their progress in teaching and the progress of the program, and served as a bank for requests and complaints. The school principals, with two exceptions,

agreed that the project coordinator had kept them well informed about every aspect of ORB. Requests for additional assistance from the coordinator by some ORB teachers included requests for more conferences and visits, comments on their work, aid in diagnosing student problems, curriculum organization, and liaison between them and the classroom teachers. It should be noted that each of these suggestions was made by one to three teachers, so they do not necessarily reflect the opinion of the entire ORB group. The evaluators do feel that much of the project coordinator's time at the beginning of the 1971-1972 school year was devoted to ordering and distributing materials, establishing rapport with and encouraging acceptance of the program by school principals. Discussions with the coordinator indicate that during 1972-1973 she intends to spend more time in the ORB classrooms, providing more direction and supervision of program instruction.

Reactions to the assistance provided by the school principals were equally positive. Eight teachers cited that the greatest assistance provided was a composite of things that the principals had done for them. Other areas cited by teachers included providing work areas, making materials available, allowing the individual teachers to implement the program as they felt was appropriate and in line with the guidelines, and offering support and cooperation. Six teachers said they would like additional assistance from the school principal, in the areas of coordination with the regular classroom teachers, communication with the school department, and discipline. That more of the ORB teachers did not ask for additional assistance suggests that they were satisfied with the support and cooperation of the principals. This cooperation is further evidenced by the fact that thirteen of fifteen principals disagreed that the presence of ORB teachers in the building had created administrative problems. Similarly, twelve principals felt that the ORB program was well organized, planned, and administered.

Program Content (Materials, Activities, Objectives)

The effectiveness of the program frequently depends on the appropriateness of, and the staff's understanding of, its objectives; it is important that the professionals involved understand what the program is attempting to accomplish and that these accomplishments will be appropriate for the target students. Program teachers were asked to state if they understood the objectives of the program in the December questionnaire; the January Process Report stated that a large majority of teachers had a full understanding of the program objectives. Other professionals involved in the program, such as classroom teachers and school principals, were asked, on the post-program questionnaires, to indicate whether they understood the objectives of the program. Since both groups were in almost unanimous agreement that they understood the objectives of the ORB Program, it is evident that program effectiveness was not limited by lack of understanding of objectives. Responses also suggest that the objectives of the program were appropriate for the ORB students; 50 of the 53 classroom teachers who responded agreed that the objectives of the ORB Program met the needs of the students. Therefore, we can conclude that program effectiveness was not limited by inappropriate objectives. When the program teachers were

asked to cite which objectives the program should include and which it should exclude, many teachers did not cite examples. Suggestions for additional objectives, offered by individual ORB teachers, included those which would focus on arithmetic skills, social development, creativity, independence, and emotional growth. Some responses to this question reflected a negative reaction to the testing program, the focus on achievement gains, and the emphasis on test scores.

Another aspect of a program which could limit its effectiveness is the lack of appropriate quantity and/or quality of materials. Therefore, the ORB teachers were asked to list those materials which they felt had been most valuable in instruction and those materials for which they still had the greatest need. The most valuable materials cited, in order of frequency of response, were workbooks, games, audio-visual equipment--especially the cassette player--sequential phonics masters, paperbacks, and other reading texts. The materials for which teachers still had the greatest need generally reflected their individual preferences. Eight teachers asked for interesting books, four asked for more workbooks, school supplies, audio-visual materials, and cassette taped reading lessons. Other responses listed commercially prepared games, art supplies, plays, poems, additional reading materials, and ditto masters. The evaluators recommend that each program teacher be polled immediately to determine their materials needs and every attempt be made to redistribute materials within the program and to order additional materials.

Although the number of students in each class was limited, to decrease student-teacher ratio and thereby increase effectiveness of instruction, another process goal of the program was to implement individualized instruction. As noted in the section, "Classroom Observations," few teachers individualized instruction to an extensive degree--the general pattern was to individualize only occasionally. On the end-of-program questionnaire the ORB teachers were requested to identify the problems in individualizing instruction. The most frequent response is described by the following quotation "not having a room or place away from the classroom to work in." The next most frequent responses include class size, heterogeneity of groups, and lack of appropriate materials. The evaluators disagree that group size, heterogeneity, or lack of interesting materials should have limited individualization but do recognize that space arrangements create problems. They suggest that the project coordinator and individual teachers discuss ways in which the use of space can be improved so that this aspect of the program can become operational.

Communication and Coordination

Three types of communication were involved in the operation of the ORB Program: ORB teachers with classroom teachers, ORB teachers with reading resource teachers, and ORB teachers with each other. The evaluators noted that these communications were generally informal, and at times limited. ORB teachers and classroom teachers were asked to suggest ways for improving com-

munication and coordination of effort between their groups. Although several ORB teachers were satisfied with communication and coordination, suggestions for improvement included holding regular meetings, encouraging a greater understanding by the classroom teachers of the compensatory teachers' responsibilities and eliciting their cooperation. ORB teachers offered the following comments:

> "I would recommend that, in the future, a brochure would be made up explaining the scope, guidelines and aims of the program. I found that some of the teachers, parents, and the principal were not quite clear about these aspects of the ORB new program."

> "If possible, there should be a joint meeting of compensatory teachers and classroom teachers to explain our presence in their classes. And the guidelines of the program should be outlined, discussed and altered if necessary to avoid many of the problems we had this year."

The classroom teachers and school principals were also asked to react to the issue of communication and coordination. The classroom teachers unanimously agreed, with 40 of 53 strongly agreeing, that the compensatory reading teachers' instruction provided valuable support for the regular classroom instruction. All principals perceived and reported the satisfaction of the classroom teachers. Similarly, all but three classroom teachers stated that sufficient cooperation and communication existed between them and the compensatory teachers; this response was confirmed by all school principals. The classroom teachers were also asked to make suggestions about how to improve communication. The majority felt that it was "very good now." Suggestions made by the remaining teachers for improving communication and coordination included increasing the length of planning sessions, scheduling monthly meetings to discuss progress and regrouping, and generally increasing communication. One teacher suggested the need for informal progress notes about the students, and another desired a clearer explanation of the program at its beginning. The evaluators feel that the scheduling of regular meetings or conferences between ORB teachers and regular classroom teachers would be a valuable asset to the planning of reading activities for both teachers, since the majority of classroom teachers (35) responded that the compensatory reading teacher generally covered lessons other than those covered in the regular class.

Communication between the ORB teachers and the reading resource teachers was an essential component of the ORB Program. Communication with the resource teachers was not a problem for the majority of the ORB teachers. Ten reported that they were satisfied and numerous teachers made no suggestions about how to improve communication. Two suggestions for improvement were scheduling more meetings between the two teachers and working together more on reading problems and related teaching techniques. The evaluators feel that both these suggestions should be considered.

Similarly only a few individuals made suggestions about ways to improve communication among the ORB teachers. These suggestions include more frequent meetings, exchanging of audio-visual supplies between and within schools, distributing a bulletin about the program, and initiating inter-classroom visitations. The in-service course made a positive contribution to improving communication among ORB teachers. The evaluators recommend that a similar in-service program be held during future ORB Programs.

Orientation and Training

Both the ORB teachers and the classroom teachers were asked to suggest areas on which pre-planning and orientation should focus. Suggestions made by ORB teachers included such topics as screening, scheduling, discussing and formulating a curriculum guide for ORB classes, discussing the meaning of the program and its goals, distributing materials, and determining needs of students and planning instruction to meet those needs. The classroom teachers' suggestions included ways of increasing their rapport and interaction with compensatory teachers and discussion of instructional material to be used in the ORB Program. Some respondents also cited areas of instruction on which they felt the ORB teachers should focus--comprehension and phonics skills.

The ORB teachers were also questioned about the most and least useful aspects of the current in-service program. Reported as the most valuable aspects were, exchanging ideas with other teachers, discussing phonetic development and behavior modification, being exposed to different speakers and a variety of reading systems, and viewing new materials and their use. The list of least valuable aspects of in-service included the talks of certain speakers, the behavior modification lectures, the explanation of testing, the introduction of in-service late in the year, and exhibits of materials.

The ORB teachers were further encouraged to cite in-service training which they thought would be of most assistance to them. Responses reflected individual preferences of the teachers and included sessions about formulation of a curriculum guide, methods of overcoming reading problems and increasing comprehension; ways of using audio-visual materials. Other suggestions included sessions on sequential phonics, practical ideas for teaching phonics, individual programmed materials, behavior modification techniques, and teaching students with emotional, or motivational or disciplinary problems. The evaluators feel that each of these topics has potential for inclusion in an in-service course, and note that individual preferences of the teachers should be considered in formulating the in-service topics.

Teacher and Parent Perception of Program Benefits and Student Reactions

The classroom teachers and parents of program students were asked to describe the benefits of the program and students' reactions to it. The teachers

and parents were in almost unanimous agreement that the students enjoyed going to the reading class, with 98 percent of the teachers and 94 percent of the parents responding positively. A similar reaction was obtained--from 85 percent of the parents and 96 percent of the classroom teachers--to the question of whether the ORB students had demonstrated significant improvement. Related comments by the parents included:

> "I have seen considerable improvement in all my daughter's marks. Before she went to the reading class she was falling behind the other children because of her reading problem."

> "This has helped my child a lot and I hope she can continue in it."

In further describing this improvement by citing the most generalizable academic and social benefits to the children receiving assistance from the ORB Program, 21 classroom teachers cited the ability to read; 20 cited the students' increased confidence in themselves, 13 cited the ability to assist one another; six cited the individual attention the students received in weak areas; four cited word analysis and vocabulary development; four cited the ability to function independently in a normal classroom. The program was also perceived as having impact on the children's social skills, as all but two classroom teachers felt that the ability of ORB atudents to function in a group and to function individually had improved during the year.

Another effective gain was reflected in the reporting of 90 percent of the parents that as a result of attending the reading class their child seemed to enjoy reading more.

Community Awareness and Reactions

The parents were asked three questions to determine the extent of their awareness of the existence and content of the ORB Program. Ninety-eight percent reported that they had been aware of their children's participation in a special reading program during the school year. Ninety-three percent reported that their children had informed them of some of the activities conducted in the reading class. The ability of almost all parents (93%) to name their child's ORB teacher further reflects their knowledge of the existence of the program. The parents' enthusiasm for the program and its accomplishments is reflected in the following comments volunteered by the parents:

> "I would like to see this special reading class go on. It has helped my son very much."

> "It is a very good program for the children hope they will continue this program for the children who need help as mine did, Thank you."

CONCLUSIONS, COMMENDATIONS, AND RECOMMENDATIONS

Conclusions

The overall evaluation of the Worcester ORB Program is that, after getting off to a rough start, it was importantly successful. It produced measurable gains in cognitive achievement, won the support of school personnel and parents, and justified the expenditure of the Title I funds which made it possible.

Much of this success was attributable to good planning, good training, and cooperation between school and program personnel.

Data gathered about student achievement indicate that in cognitive areas program students made significant gains during the seven-month instructional period and did so at a significantly higher rate than control group students. Even greater gains might have been possible had there been more individualization of instruction.

Success in the affective domain was more limited, but that may have been because the program did not include specific affective behavioral objectives, or activities designed to accomplish those objectives.

Teachers involved in evaluation of the program were in unanimous agreement that compensatory instruction provided valuable support for regular classroom instruction.

The program staff should be highly commended for the impact of the ORB Program.

Recommendations

On the basis of the findings reported, the evaluators recommend that:

1. Specific processes be directed toward encouraging positive affective development.

2. Behavioral objectives be formulated, where necessary, and used during the entire school year.

3. The pre-service sessions be revised and restructured to focus more on the particular needs of the ORB teachers.

4. Orientation sessions be scheduled to include regular classroom teachers.

5. Greater communication between ORB teachers and reading resource teachers be encouraged.

6. Greater coordination between ORB teachers and classroom teachers be encouraged by structuring regular meetings or conferences.

7. Instruction be more individualized.

8. In-service programs be continued and addressed to the particular needs of program teachers, including discussions of methods for individualizing instruction.

9. Every attempt be made to secure appropriate classroom facilities where they are currently inappropriate.

10. Materials be ordered earlier.

11. Teachers be polled to determine the materials they need and materials be redistributed within the program or ordered as soon as possible.

12. Additional materials be ordered for older students.

13. Students be selected by those teachers who were their classroom teachers at the end of the year prior to program operation.

14. Increased diagnosis of needs and prescription of instruction be done by the ORB teachers in cooperation with the children's regular classroom teacher.

15. The Gates-McGinitie Reading Tests be replaced by the Metropolitan Reading Tests, 1970 edition.

Commendations

The program has earned specific commendations for the following:

1. The reading achievement gains of the students.

2. The improved final grades, in other subject areas, of students on some grade levels.

3. The decreased absenteeism during 1971-1972 as compared to that in 1970-1971.

4. The interest, enthusiasm, and high caliber of project staff.

5. The increasingly smooth operation of the program.

6. The positive reaction of program parents.

7. The implementation of an effective in-service program.

8. The satisfactory communication between project coordinator, teachers, and school principals.

9. The efforts of the project staff to provide a variety of instructional experiences for the students.

APPENDIX A

APPENDIX A

PROGRAM INSTRUCTION

In order to facilitate the portrayal of ORB classrooms, a list of descriptive categories was formulated. A scale of 0 to 3 was used to rate the frequency of occurrence of each teaching situation for each ORB teacher, based on four to five observations of her classes by the evaluators. A rating of 0 signifies that the particular activity has never been observed; 1 describes an activity that was occasionally observed; 2 means that the activity has been observed a number of times; a rating of 3 indicates that the activity was observed during all visits to the class. The evaluators attempted to rate each teacher on each category on the basis of classroom observations, and interviews. Although these ratings are, by their nature, somewhat subjective, the evaluators feel that they present a generalized picture of the classroom activities in the ORB Program. The following pages define each category and describe its occurrence.

Individual Reading Assignments: This category describes activities where students are assigned passages to read in various texts. Each student may have a different assignment, or two to three students may be reading the same text. When this type of activity is occurring, the teacher usually will move from student to student or group to group, and give assistance or ask questions to assess progress.

More than one-half of the teachers assign individual reading activities for a moderate or extensive amount of the time. Nevertheless, a considerable number of teachers rarely or never give individual reading assignments. These younger students, especially the first graders, do not function well on their own, expecially in a reading situation. Thus, they are seldom given individual reading assignments.

Reading Text as a Class: This category differs from "Individual Reading Assignments" in that all students are reading the same material. This activity is a class activity, and the teacher is conducting a group lesson. Each student takes a turn reading aloud while the other students follow in their texts. Generally, when this type of instruction occurs, the teacher monitors the reading and corrects the students' errors where necessary. Often this activity is followed by a question and answer period, either using questions in the text or teacher prepared questions about the reading selection.

The teachers seldom use this technique; it is completely inconsistent with the objectives of the program. In cases where it is used extensively, the ORB program coordinator has consulted the teachers involved so that they can revise their methods and implement more effective instruction.

Flashcards or Word Drills: In this type of activity the teacher holds up flashcards before the class, and students identify the stimulus on them. The term "word drills" refers to the teacher's writing of words on the chalkboard, followed by students reading them. The words which serve as stimuli are frequently selected to meet specifically diagnosed needs; in this way, these exercises can be tools for individualizing instruction. Observations indicate, however, that this is better suited to be a class exercise rather than an individual one. The vast majority of teachers seldom use this exercise.

Worksheets: During this type of activity students complete worksheets from a published series, or prepared by the teacher. Use of worksheets can be tailored to individual student needs. More than 80% of the teachers make some use of worksheets.

Games: The use of games occurs in almost all program classrooms. Some teachers used games regularly, in almost every class. Other teachers seldom use them, or reserve them for late afternoon or Friday classes. Some games have been specifically designed for classroom use. Others are popular games, which help the students practice word usage.

The use of educational games and toys is consistent with the program objectives dealing with student attitudes. In many cases, students enrolled in the ORB Program have an intense dislike for school and reading, as a result of years of failure and frustration. The use of games and toys with an educational theme encourages these students to participate in exercises which they enjoy and from which they can learn. However, these games do have limited usefulness. Unfortunately, it appears to the evaluators that, in many situations, games are used solely for their entertainment value; this use might be acceptable on isolated occasions, such as just before a holiday, or for a reward. It appears that there is room for some further study of the optimally effective use and timing of games. Such a game as Parchesi, observed in one or two rooms, appears to have little educational value in a school reading program, and should be discouraged, in the absence of compelling evidence of its relevant value.

Use of Audio-Visual Equipment: The ORB Program does not have a large quantity of equipment available for use by its teachers. All teachers do have cassette recorders, supplied by ORB, and some have access to such equipment as controlled readers, language masters, or phonographs.

Almost half of the teachers observed have not used any of this equipment. Those who do use equipment either have borrowed it from the schools in which they teach, or have brought in personal equipment. Students enjoy using these devices. Although equipment is considerably more expensive than games, it is valuable in maintaining student interest, as well as effective for instruction. The possibility of obtaining and distributing more equipment to the teachers in the ORB Program for next year should be explored.

Variety of Activities During Period: Teachers frequently changed the lesson at some time during the period to prevent the students from becoming bored. This rating describes the extent to which more than one activity was conducted during an ORB period.

Forty-five minutes can be a considerable length of time, especially for younger students. Moreover, the conditions under which many of the ORB classes are held are very poor. In addition, many of the students in the ORB Program are difficult to motivate because of their backgrounds; it is not difficult therefore to see the importance of varying the students' activities throughout the reading period. Only a very small percentage of the teachers conducted a single activity each period. By far the majority of teachers plan at least two types of activities for each class, which number, in most cases, was adequate. One activity will be a work activity, the second activity will be a high interest activity. This sequence was observed to give students incentive to complete the work activity, so they could then participate in an activity which they liked better.

Only one teacher observed by the evaluators varied her activities extensively. This teacher's classroom has several different interest areas around the room, and students move from one activity to another as time permits. The format seems to maintain interest, although the lessons were judged to be individualized.

Innovative Techniques: This category was used to rate the variety and creativity of instructional activities. As noted earlier in these pages, students in the ORB Program are generally difficult to motivate, and are not particularly good workers. Several teachers have devised ways to stimulate their students' interest in reading, so that they will work harder. Almost all teachers are using behavior modification techniques to some extent; for this discussion, it is not considered an innovative technique.

In rating a teacher in this category the evaluators tried to note those activities which teachers used to motivate students, especially those techniques which the teachers appeared to have created themselves. For example, one teacher had her students write down all the rules of the games of hockey and football, and she posted these on the board. Each day the students read the charts until they knew and understood all the words. The students in this class were quite proud of the fact that they could read the hockey rules, and could demonstrate their proficiency for the evaluators. The same teacher made puppets at home and had her students write and act out a play with them for the regular classroom students. She also had her students grow plants in little pots and used this experiment to teach her students the names of flowers. This teacher also used a slide projector, a tape unit, and a record player, in her classes.

Needless to say, this teacher was the outstanding example of those teachers in this category. Most teachers were judged to use innovative techniques infrequently, if ever.

Success Experiences: Many of the children in the ORB Program have been below grade level in their school work for some time; therefore, they are very discouraged and have a low self-image. One objective of the ORB Program is to provide these students with specific success experiences to improve their self-image and self-confidence. The presence of success experiences in these classes requires designing each student's program so that he can do his work successfully, and then giving praise to that student for completing the work satisfactorily. The overwhelming majority of the teachers appear to be aware of this goal and attempt to meet it with their students.

Individualization: One major goal of the program is individualizing instruction, so that each student can receive instruction in his weak areas and thus have his particular needs met. Teachers were encouraged to limit their class sizes to four to five students so that this individualization could occur. Unfortunately, the teachers have met with little success in meeting this objective. One problem, may be class size; few have kept their classes to four to five students. A second reason given by many was that they did not have time to prepare individualized lessons for 30 students. Others indicated that the conditions under which they had to teach prevented this type of instruction; in some cases this appeared a valid reason. Seventeen percent of the teachers never appeared to be individualizing their instruction; that is, all of their activities were oriented toward the group as a whole. It may be that these teachers were fortunate enough to have classes which are homogeneous in ability. Indeed, homogeneity of their classes is another reason often gave for not individualizing lessons. But, in addition to individualized instruction, individualized attention is also a goal of the ORB Program.

Forty-one percent of the teachers used some individualized instruction. Thirty-one percent used a moderate amount, and ten percent of the teachers used individualized instruction extensively. These figures challenge the statement that there is insufficient time to individualize instruction for thirty students. What may be needed is instruction in this teaching technique.

Availability of Classrooms: This category indicates whether the ORB class is held in a regular classroom or the teachers were required to use other facilities, such as hallways, cloakrooms, or libraries. A rating of 0 means that no classroom was available; a rating of 3 means that the teacher has a classroom. One of the teachers has a classroom available for two of her afternoon groups. A 1 and 2 indicates that part-time use of a classroom was available to the teacher.

It appears, as a general assessment, that teachers with classrooms have received higher ratings, which could be expected. The evaluators have discussed this problem extensively, and review here the recommendation that every effort be made to improve the teaching locations in the majority of the ORB classes.

Materials

As mentioned in previous reports, the problems in getting the ORB Program organized for the 1971-72 academic year were considerable. One of the pressing problems has been lack of materials. The coordinator has done a good job in ordering and distributing materials to the teachers. They now report that they have sufficient books, texts, supplies, and equipment to conduct their classes.

The one complaint concerning materials was from ORB teachers in the upper level classes--grades 4, 5, and 6. These teachers complained that they could not locate the proper level of reading materials. Most of the ORB materials were too easy for these children, and the proper materials for that level has not yet been received.

APPENDIX B

Table A

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 1

Subject	Positive Change	Negative Change	No Change	t	p
Reading	17	3	12	2.89	< .01
Arithmetic	16	2	8	2.89	< .01
Language	4	0	1	1.50	NS
Conduct	3	1	1	0.50	NS
Effort	4	2	0	0.42	NS

Table B

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 2

Subject	Positive Change	Negative Change	No Change	t	p
Reading	81	26	30	5.22	< .001
Arithmetic	62	30	34	3.23	< .01
Language	54	34	38	2.03	< .05
Spelling	7	4	1	0.57	NS
Social Studies	2	0	2	0.71	NS
Conduct	40	43	25	0.22	NS
Effort	51	44	23	0.61	NS

Table C

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 3

Subject	Positive Change	Negative Change	No Change	t	p
Reading	65	26	43	3.98	< .001
Arithmetic	55	50	34	0.39	NS
Language	57	32	50	2.54	< .05
Spelling	58	33	34	2.52	< .05
Social Studies	8	0	12	2.50	< .05
Conduct	42	32	56	1.05	NS
Effort	52	37	40	1.48	NS

Table D

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 4

Subject	Positive Change	Negative Change	No Change	t	p
Reading	70	39	18	2.87	< .01
Arithmetic	36	58	28	2.17	< .05
Language	49	42	30	0.63	NS
Spelling	45	49	28	0.31	NS
Social Studies	34	44	20	1.02	NS
Conduct	38	37	35	0.00	NS
Effort	41	38	30	0.23	NS

Table E

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 5

Subject	Positive Change	Negative Change	No Change	t	p
Reading	48	39	31	0.86	NS
Arithmetic	42	64	22	2.04	< .05
Language	59	21	42	4.14	< .001
Spelling	53	34	31	1.93	NS
Social Studies	55	30	30	2.60	< .01
Conduct	32	32	30	-0.13	NS
Effort	39	26	28	1.49	NS

Table F

Comparison of 1971-1972 and 1970-1971 Final Grades for Program Students -- Grade 6

Subject	Positive Change	Negative Change	No Change	t	p
Reading	47	31	16	1.70	NS
Arithmetic	42	29	24	1.42	NS
Language	39	39	19	-0.11	NS
Spelling	39	29	22	1.09	NS
Social Studies	41	31	21	1.06	NS
Conduct	34	22	25	1.47	NS
Effort	32	21	27	1.37	NS

Table G

Behavioral Objectives - Grade 1
Sign Test

Objective #	Positive Change %	No Change %	Negative Change %	z
1	-	94	6	0.71 NS
2	5	90	5	-0.50 NS
3	16	79	5	1.07*
4	25	72	3	2.19*
5	24	68	8	1.43 NS
6	22	76	2	2.00 NS
7	3	97	-	0.00 NS
8	30	62	8	1.89*
9	16	73	11	0.31 NS
10	6	85	9	0.00 NS
11	20	63	17	0.00 NS
12	31	55	14	1.25 NS
13	44	39	17	1.91*
14	44	52	4	2.78*
15	47	45	8	2.89*
16	50	28	22	1.76*
17	42	52	6	2.93*

NS - Not Significant * $p < .05$

Table G (Cont.)

Behavioral Objectives - Grade 1
Sign Test

Objective #	Positive Change %	No Change %	Negative Change %	z
18	38	31	31	0.40 NS
19	31	47	22	0.45 NS
20	33	53	14	1.46 NS
21	29	50	21	0.49 NS
22	30	50	15	1.46 NS
23	35	50	21	0.91 NS
24	44	44	12	2.27*
25	53	35	12	2.77*

NS - Not Significant * $p < .05$

Table H

Behavioral Objectives - Grade 2
Sign Test

Objective #	Positive Change %	No Change %	Negative Change %	z
1	41	47	12	2.69*
2	24	46	8	3.58*
3	26	37	13	3.16*
4	31	54	15	1.43 NS
5	37	50	13	2.16*
6	48	48	4	4.23*
7	42	50	8	3.33*
8	44	44	12	2.96*
9	29	54	17	1.02 NS
10	45	42	13	2.55*
11	45	43	12	2.96*
12	33	41	26	0.55 NS
13	29	38	33	0.18 NS
14	31	47	22	0.59 NS
15	42	44	14	2.45*
16	37	41	22	1.27 NS
17	42	41	17	2.14*
18	46	31	23	1.83*
19	37	42	21	1.27 NS
20	41	50	9	2.94*

NS - Not Significant * $p < .05$

Table I

Behavioral Objectives - Grade 3
Sign Test

Objective #	Positive Change %	No Change %	Negative Change %	z
1	31	46	23	0.57 NS
2	52	35	13	3.28*
3	42	52	6	3.60*
4	49	35	16	2.63*
5	42	34	14	3.16*
6	51	31	18	2.71*
7	46	44	10	3.21*
8	51	37	12	2.94*
9	35	26	39	0.16 NS
10	33	40	27	0.37 NS
11	44	23	33	0.79 NS
12	33	30	37	0.17 NS
13	42	37	21	1.75*
14	42	39	19	1.85*
15	39	33	28	0.86 NS
16	37	37	26	0.70 NS
17	32	44	24	0.57 NS

NS - Not Significant * $p<.05$

Table I (Cont.)

Behavioral Objectives - Grade 3
Sign Test

Objective #	Positive Change %	No Change %	Negative Change %	z
18	39	40	21	1.43 NS
19	43	37	20	1.93*
20	44	33	23	1.69*
21	23	71	6	2.05*
22	23	63	14	0.90 NS
23	23	69	8	1.75 NS
24	17	71	12	0.57 NS
25	17	71	12	0.57 NS

NS - Not Significant * $p < .05$

Table J

Accomplishment of Grade 1 Objectives
Interim and Final Ratings

Objective	Percentage Receiving Each Rating Interim N = 38 Final N = 37 YES	NO
Identifies initial consonants on flash and picture cards	100 - 97	0 - 3
Identifies final consonants on flash and picture cards	90 - 89	10 - 11
Identifies medial consonants on flash and picture cards	59 - 68	41 - 32
Identifies letters of the alphabet as vowels or consonants	58 - 78	42 - 22
Forms the plural of singular nouns	58 - 73	42 - 27
Reads silently without moving lips	8 - 27	92 - 73
Orally reads left to right	97 - 100	3 - 0
Reads orally with natural expression and voice	37 - 59	63 - 41
Understands what is read	74 - 76	26 - 24
Enjoys reading	92 - 94	8 - 6

Table K

Accomplishment of Grade 1 Objectives

Objective	Percentage Receiving Each Rating Interim N = 38 Final N = 37				
	1	2	3	4	5
Blends sound patterns of one syllable words	14 - 13	3 - 13	25 - 17	28 - 19	30 - 38
Produces two words rhyming with given word	11 - 16	8 - 3	21 - 5	30 - 28	30 - 38
Produces two words beginning with the same blend of a given word	32 - 11	19 - 16	24 - 22	11 - 32	14 - 19
Identifies the initial digraph of words	49 - 34	24 - 14	14 - 21	8 - 17	5 - 14
Identifies the two words forming a compound word	45 - 30	16 - 13	18 - 22	18 - 24	3 - 11
Identifies the parts of a book	35 - 27	30 - 19	22 - 24	8 - 30	5 - 0
Matches appropriate titles to paragraphs	51 - 35	11 - 16	22 - 22	16 - 24	0 - 3
Determines meaning of words from context	24 - 27	22 - 16	35 - 17	11 - 27	8 - 3
Identifies missing detail in a picture	8 - 19	8 - 3	27 - 11	35 - 35	22 - 32

Table K (Cont.)

Accomplishment of Grade 1 Objectives

Objective	Percentage Receiving Each Rating Interim N = 38 Final N = 37				
	1	2	3	4	5
Selects logical continuation to story sequence	11 - 16	14 - 6	25 - 19	36 - 33	14 - 27
Places five pictures in sequence	11 - 11	8 - 8	14 - 8	24 - 25	43 - 48
Identifies fact and fancy in a picture	11 - 9	14 - 11	19 - 9	36 - 40	20 - 31
Describes the emotion depicted in a picture	8 - 8	14 - 8	22 - 19	31 - 30	25 - 35
Identifies the short vowel sounds in words	17 - 8	28 - 14	19 - 22	8 - 22	28 - 34
Can read independently	33 - 22	20 - 14	25 - 19	8 - 28	14 - 17

Table L

Accomplishment of Grade 2 Objectives

Objective	Percentage Receiving Each Rating Interim N = 65 Final N = 52				
	1	2	3	4	5
Selects the word that best completes a rhyme	6 - 7	6 - 8	25 - 15	28 - 19	35 - 51
Identifies the short vowel sounds in words	8 - 2	21 - 17	22 - 15	24 - 18	25 - 48
Identifies the long vowel sounds in words	11 - 9	14 - 6	29 - 18	18 - 24	28 - 43
Selects words with same initial or final consonant as object shown	6 - 4	5 - 6	9 - 7	33 - 15	47 - 68
Reads one syllable words with final and/or initial consonant blends	11 - 7	8 - 11	24 - 15	24 - 22	32 - 45
Pronounces one syllable words ending in verbal digraph	11 - 7	17 - 9	32 - 22	24 - 19	16 - 43
Combines words to form compound words	13 - 13	11 - 4	32 - 16	24 - 26	19 - 41
Identifies root portion of words	21 - 17	27 - 20	25 - 28	22 - 13	5 - 22
Arranges letters in alphabetical order	4 - 4	8 - 4	20 - 20	20 - 22	48 - 50

Table L (Cont.)

Accomplishment of Grade 2 Objectives

Objective	Percentage Receiving Each Rating Interim N = 65 Final N = 52				
	1	2	3	4	5
Locates words in dictionary	30 - 25	32 - 23	27 - 28	3 - 13	7 - 11
Writes sentences using given words	15 - 10	15 - 6	32 - 34	25 - 23	13 - 27
Places five pictures in sequence	3 - 4	3 - 7	29 - 19	31 - 36	34 - 34
Recalls details of a paragraph	10 - 9	10 - 19	38 - 33	25 - 24	17 - 15
Identifies synonyms	20 - 14	19 - 25	30 - 23	23 - 23	8 - 15
Differentiates between nonsense rhyming words and poems	21 - 21	22 - 10	17 - 29	27 - 19	13 - 21
Identifies feelings conveyed in a passage	14 - 12	16 - 17	27 - 33	29 - 23	14 - 15
Identifies characteristics of story characters	19 - 15	12 - 9	22 - 33	31 - 19	16 - 24
Comprehends what is read	9 - 5	18 - 21	31 - 34	28 - 21	14 - 19
Enjoys reading	11 - 15	14 - 4	27 - 31	24 - 19	24 - 31
Readings independently	15 - 17	19 - 7	24 - 30	31 - 26	11 - 20

Table M

Accomplishment of Grade 3 Objectives

Objective	Percentage Receiving Each Rating Interim N = 58 Final N = 52				
	1	2	3	4	5
Identifies the position of a given consonant	0 - 0	7 - 8	24 - 9	18 - 33	51 - 50
Selects words with given three letter consonant blends	11 - 2	12 - 15	22 - 8	11 - 25	31 - 50
Selects words with common long vowel sounds	7 - 2	16 - 9	20 - 19	27 - 25	29 - 45
Identifies accented syllables	44 - 30	29 - 21	21 - 21	2 - 18	4 - 10
Writes irregularly formed plurals	31 - 14	15 - 18	39 - 27	7 - 27	7 - 14
Writes common contractions	17 - 6	24 - 13	24 - 29	15 - 35	21 - 17
Identifies the meanings of prefixes	29 - 24	19 - 20	10 - 28	5 - 16	6 - 12
Finds given name in a phone directory	23 - 14	27 - 11	22 - 39	18 - 16	10 - 20
Follows multiple (4-5) step command	20 - 6	14 - 6	14 - 33	20 - 33	32 - 12
Finds words in a dictionary	16 - 12	16 - 12	25 - 32	27 - 28	16 - 16
Locates sentences in a paragraph containing the answer to a given question	12 - 4	14 - 17	30 - 33	26 - 24	17 - 22

Table M (Cont.)

Accomplishment of Grade 3 Objectives

Objective	Percentage Receiving Each Rating Interim N = 58 Final N = 52				
	1	2	3	4	5
Categorizes words based on meaning	9 - 6	17 - 20	17 - 23	40 - 31	17 - 20
Writes creatively when given stimulus	28 - 8	11 - 17	36 - 36	36 - 27	11 - 12
Selects a simile from a passage	40 - 29	21 - 25	16 - 24	23 - 18	0 - 4
Answers questions probing cause and effect relationships	23 - 6	19 - 22	25 - 34	26 - 34	7 - 4
Demonstrates functional understanding of time in relation to their schedule	12 - 0	14 - 20	24 - 25	24 - 25	30 - 30
Demonstrates a functional understanding of day, week, and month	5 - 0	7 - 18	24 - 19	27 - 33	36 - 40
Enjoys reading	5 - 4	19 - 6	25 - 31	23 - 33	28 - 26
Can read independently	11 - 9	18 - 15	28 - 19	24 - 35	18 - 22
Uses phonetic, word analysis and context clues to identify unknown words	9 - 8	19 - 13	32 - 30	26 - 32	14 - 17

Table N

Achievement of Grade 3 Objectives

Objective	Percentage Receiving Each Rating Interim N = 58 Final N = 52	
	YES	NO
Comprehends what is read	71 - 87	29 - 13
Recalls important details	65 - 73	35 - 27
Selects important details	60 - 71	40 - 29
Draws inferences	41 - 48	59 - 52
Predicts outcomes	60 - 63	40 - 37